

ini

5

10


15

20

25

30

35

 request depending on the reject time information attached to said retry request; and

5 (d) at said target node staying in the state capable of providing service, when a retry request is received, processing said retry request in the same manner as in said operation (c), while when a first request is received, returning a reject reply by attaching thereto reject time information.

10 3. A method for avoiding starvation at an initiator node in a computer network to which are connected at least one target node which provides service and a plurality of initiator nodes which request service from said target node, said method comprising the operations of:

15 (a) at said target node, initializing to 0 all of a first parameter CE consisting of at least one bit, a second parameter SE consisting of the same number of bits as the number of bits of said first parameter, a third parameter CC consisting of the number of bits of
20 determined by the number of said plurality of initiator nodes, and a fourth parameter SC consisting of the same number of bits as the number of bits of said third parameter;

25 (b) at said initiator node, sending a first request to said target node;

(c) when said first request is received at said target node, if $CE = SE$ and $SC = 0$ and if said target node is in a state capable of providing service, accepting said first request;

30 (d) when said first request is received at said target node, if $CE = SE$ and $SC > 0$ or if $CE = SE$ and said target node is in a state incapable of providing service, incrementing said CE, setting said CC to 1, and returning a reject reply by attaching thereto the value
35 of said CE in response to said first request;

(e) when said first request is received at said target node, if $CE \neq SE$, incrementing said CC and

0965454 083100



5

10

15

20

25

30

35



5

10


15

20

25

30

35

 which provides service and a plurality of initiator nodes which request service from said target node, said method comprising the operations of:

5 (a) sending a first request to said target node; and

(b) when a reject reply is received in response to said first request, sending a retry request by attaching thereto a parameter whose value is equal to the value of a parameter of reject time information
10 attached to said reject reply.

6. An apparatus for avoiding starvation at an initiator node in a computer network to which are connected at least one target node which provides service and a plurality of initiator nodes which request service
15 from said target node, said apparatus comprising:

means for, when a request is received from said initiator node during a period that said target node is unable to provide service, returning a reject reply by attaching thereto reject time information that matches
20 said period;

means for, when said target node is in a state capable of providing service, preferentially accepting a retry request carrying older reject time information; and

25 means for, when said target node is in the state capable of providing service, returning a reject reply by attaching thereto new reject time information in response to any first request received before retry requests arising previously rejected requests are all
30 accepted.

7. An apparatus for avoiding starvation at an initiator node in a computer network to which are connected at least one target node which provides service and a plurality of initiator nodes which request service
35 from said target node, said apparatus comprising:

first means for, when a first request is received at said target node when said target node is in

0053154 083100

5

10

15

20

25

30

35

[illegible]



5

15

20

25

30

35

35 tenth means for, when said retry request
is received at said target node, if any of operation
conditions in said seventh, eighth, and ninth means is
not satisfied, returning a reject reply by attaching

06-03-2018

5

10

20

25

30

35

sixth means for, when a retry request is received, if $RE = SE+1$ and $SC = 0$ and if said target node is in the state capable of providing service,



5

10

15

20

25

30

35

[Handwritten signature]

5 a facility for, when said target node is
in the state capable of providing service, returning a
reject reply by attaching thereto new reject time
information in response to any first request received
before retry requests arising previously rejected
10 requests are all accepted.

12. A recording medium readable by an apparatus for
avoiding starvation at an initiator node in a computer
network to which are connected at least one target node
which provides service and a plurality of initiator nodes
15 which request service from said target node, said
recording medium having stored thereon a program for
implementing:

20 a first facility for, when a first request
is received at said target node when said target node is
in a state capable of providing service, accepting said
first request;

a second facility for, when a first request is received at said target node after said target node has moved to a state incapable of providing service, returning a reject reply in response to said first
25 request by attaching thereto reject time information consisting of at least one bit;

30 a third facility for, when a retry request
is received at said target node after said target node is
restored to the state capable of providing service,
accepting said retry request depending on the reject time
information attached to said retry request; and

35 a fourth facility for, at said target node
staying in the state capable of providing service, when a
retry request is received, processing said retry request
in the same manner as processed by said third facility,
while when a first request is received, returning a

Sub
BI
reject reply by attaching thereto reject time information.

13. A recording medium readable by an apparatus for avoiding starvation at an initiator node in a computer network to which are connected at least one target node which provides service and a plurality of initiator nodes which request service from said target node, said recording medium having stored thereon a program for implementing:

10 a first facility for, at said target node, initializing to 0 all of a first parameter CE consisting of at least one bit, a second parameter SE consisting of the same number of bits as the number of bits of said first parameter, a third parameter CC consisting of the number of bits of determined by the number of said
15 plurality of initiator nodes, and a fourth parameter SC consisting of the same number of bits as the number of bits of said third parameter;

20 a second facility for, at said initiator node, sending a first request to said target node;

a third facility for, when said first request is received at said target node, if $CE = SE$ and $SC = 0$ and if said target node is in a state capable of providing service, accepting said first request;

25 a fourth facility for, when said first request is received at said target node, if $CE = SE$ and $SC > 0$ or if $CE = SE$ and said target node is in a state incapable of providing service, incrementing said CE, setting said CC to 1, and returning a reject reply by
30 attaching thereto the value of said CE in response to said first request;

a fifth facility for, when said first request is received at said target node, if $CE \neq SE$, incrementing said CC and returning a reject reply by
35 attaching thereto the value of said CE;

a sixth facility for, at said initiator node that received said reject reply, sending a retry

001100 4515150

Sub
Bl

5

10

15

20

25

30

35



5

10

15

20

25

30

35

15. A recording medium readable by an initiator node in a computer network to which are connected at least one target node which provides service and a

plurality of initiator nodes which request service from
said target node, said recording medium having stored
thereon a starvation avoiding program for implementing:
a facility for sending a first request to
5 said target node; and
a facility for, when a reject reply is
received in response to said first request, sending a
retry request by attaching thereto a parameter whose
value is equal to the value of a parameter of reject time
10 information attached to said reject reply.